〔Bull. Chem. Soc. Jpn., 58, 1978 (1985)〕

The Curve Fitting Analysis of D. c. and A. c. Voltammograms of a Two-step Surface-redox Reaction. The Application to the Surface-redox System of Adriamycin Adsorbed on a Pyrolytic Graphite Electrode.

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A theoretical study of the two-step surface-redox reaction ($O_{ad}+n_1e \rightleftarrows S_{ad}$, $S_{ad}+n_2e \rightleftarrows R_{ad}$, O_{ad}, S_{ad}, and R_{ad}, representing the oxidized, semiquinone, and reduced form, respectively) was performed using d.c. voltammetry. A new method based on a non- linear least-squares curve fitting of cyclic d.c. and a.c. voltammograms was proposed for determining thermodynamic and kinetic parameters and was successfully applied to the surface-redox system of the quinone moiety of adriamycin (antitumor anthracycline antibiotics) absorbed on a pyrolytic graphite electrode.

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Gas Chromatographic Determination of Uric Acid in Serum with Uricase-Catalase System.

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A new method for the gas chromatographic determination of uric acid in serum using uricase-catalase system is described. This method is based on the combination of the enzymatic conversion of methanol into formaldehyde through the action of hydrogen peroxide formed from uric acid with uricase and derivatization of the resulting formaldehyde with pentafluorobenzyloxylamine. The method is superior to the colorimetric method with respect to specificity and sensitivity. Linear calibration graphs passing through the origin were obtained in the range 8–200 $\mu g\ ml^{-1}$ uric acid in serum for FID and 1–12 $\mu g\ ml^{-1}$ for ECD using 0.1 ml of serum.

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Direct Method for Determination of Valproic Acid in Serum by High Performance Liquid Chromatography.

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To 0.2 ml of serum sample is added 0.2 ml of acetonitrile solution containing thymol as an internal standard(2 $\mu g\ ml^{-1}$). After centrifugation, a 20-μl aliquot of the supernatant is injected directly into a liquid chromatograph. The chromatographic procedure utilizes a reversed phase ODS column with a mobile phase consisting of 0.05 M phosphate buffer(pH 3.0) -acetonitrile-isopropanol (60:25:15) at a flow rate of 0.7 ml min^{-1}. Valproic acid was detected by UV absorption at 220 nm. The calibration curve was linear from 20 to 120 $\mu g\ ml^{-1}$ valproic acid in serum. This method has been applied successfully to monitoring routine serum levels of valproic acid. The results agreed fairly well with those obtained by gas chromatography.